nite term readily understood by those of ordinary skill in the art of thermoplastic processing and packaging.

The other exception is the use of the term "seamless" in original claim 9, now new claim 19. Applicants traverse the rejection under 112 2d with respect to this term. It is respectfully submitted that the term "seamless" is a clear and well known term in the packaging industry, and among resin and plastic converters in the production of plastic tubing for packaging applications, and as such is a clear and definite term readily understood by those of ordinary skill in the art of thermoplastic processing and packaging.

35 U.S.C. §102

On page 5 of the Office Action, paragraphs 13 and 14, claims 1 to 3, and 6 to 10, were rejected under 35 U.S.C. §102 (b) as being anticipated by Speer et al. (US 5,350,622).

Applicants respectively traverse to the extent this rejection is applied to the claims as presented.

Speer et al. is directed to oxygen scavenging compositions that can be used in any type of flexible or rigid single or multilayer article. The only description of a heat-shrinkable film in Speer et al. is in column 11, lines 32-41, and in the structure there indicated, the abuse layer is uncrosslinked EVA, and not a polyamide, let alone a polyamide with a melting point of at least 175 °C. In the passage referred to in the Office Action, in column 12, lines 4 to 22, the manufacture of the same film is described even if generic terms are employed to indicate the layers, and in the next passage in column 12, at lines 23 to 27, it is reported that "[a] similar three-layered structure, absent any scavenger layer, is disclosed in US 4,278,738". This latter patent describes exactly the same structure: cross-linked EVA//PVDC/EVA.

It is certainly true that in column 12, lines 1 to 3, of Speer, it is indicated that "the abuse layer (c) may be polyethylene, EVA, cross-linkable polyolefins, ionomer or polyamide," but, first of all, it is not clear to what type of structures this statement should refer and, secondly, it is not specified that the polyamide has a melting point equal to or higher than 175°C, since the copolymers, such as nylon 6/12 and nylon 6/69, cited in the list of possible polyamides, can have melting points higher ***or lower*** than 175 °C, depending on their exact composition.

Also, if the outer abuse layer can be selected from a long list including polyamides, the barrier lay r of Speer et al. can also be selected among a long list of possible oxygen barri rs (se column 7, lin s 31-38).

To get from Speer to the present invention, therefore, the person skilled in the art is required to make four different selections :

- the choice of a heat-shrinkable film (as opposed to the other films taught in Speer et al.),
- the choice of a vinylidene chloride copolymer barrier layer (as opposed to the many other oxygen barrier materials taught in Speer et al.),
- the choice of a polyamide as the outer layer, and
- once a polyamide is chosen for the outer layer, the choice of a polyamide with a melting point higher than 175°C.

This is the only combination that would provide the required balance of good properties, including good shrink properties, abuse resistance and stack sealability, discussed in the application. Speer et al. however do not describe this combination, and do not contain any suggestion leading thereto as the closest structure in the examples is a structure with an uncross-linked EVA as the outer abuse resistant layer.

With respect to new claim 19, based on original claim 9, the Office Action does not point to any teaching in Speer et al. directed to a multi-layer heat-shrinkable film of claim 11 in the form of a **seamless tubing** wherein the outer heat-sealing layer is the innermost layer of the tube.

For the reasons outlined above, applicants respectfully submit that new claims 11 to 20 are not anticipated by Speer et al.

35 U.S.C. §103

On pages 6 and 7 of the Office Action, paragraphs 15 and 16, claims 4 and 5 were rejected under §103(a) as being unpatentable over Speer et al. (U.S. Patent No. 5,350, 622) in view of Arita et al. (US 4,652,490).

Applicants respectfully traverse this rejection to the extent it may be applied to the claims now presented.

Applicants rely on the above comments re: Speer et al.

Also, Arita et al. is directed to heat-shrinkable structures obtained by laminating together oriented heat-shrinkable layers. In Example 2, one surface of a heat-shrinkable nylon 6 film (nylon 6 has a very high melting point, well above the 175°C limit) is *coated* with PVDC and then this film is laminated, ***via a layer of LDPE extrusion coated on the PVDC surface***, to a heat-shrinkable, oriented, LLDPE film. The film structur s described in the present application are different from thos described in Arita. Th applicants extrude PVDC instead of making a coating thereof, and obtain the films as cast

tapes and then orient them. Thus, all the layers are oriented, while in Example 2 of Arita the extrusion coated LDPE used as an adhesive is not oriented. New ind pendent claim 11 now contains the limitation that all the layers of the film are oriented.

With respect to new claim 19, based on original claim 9, applicants note for the record that Arita et al. is not directed to a multi-layer heat-shrinkable film of claim 11 in the form of a **seamless tubing** wherein the outer heat-sealing layer is the innermost layer of the tube. In Arita, the lamination there described is made on a flat sheet.

The teaching "blends of two or more foregoing polymers" in column 2, line 40 of Arita et al., refers to:

polyamides (not all with a melting point of at least 175°C),
polyesters,
vinyl chloride polymers,
acrylonitrile polymers,
styrene polymers,
olefin polymers,
polyvinyl alcohol, and
EVOH,

and the above quoted sentence is also followed by "and polymer mixtures containing one or more foregoing polymers as a main component" , thus covering almost any polymer or polymer blend known at least in the film area. In spite of said generic statement, the text does not contain any example of blends.

There are to be sure other patents, and commercial products, where blends of nylon and EVOH are specifically described for use in the *internal or core* layers in the manufacture of heat-shrinkable films, but the question to be answered here is for what purpose. Typically EVOH and nylon are blended to get an oxygen barrier layer that has a higher oxygen transmission rate than pure EVOH. As an example, for packaging respiring products, such as cheese, blends of nylon and EVOH are very commonly employed as barrier layers. In applicants' invention, however, the oxygen barrier requirements are met by the PVDC barrier layer (also because it is widely known that the barrier properties of EVOH are negatively affected by humidity and therefore the use of this resin in an outer layer, in contact with the atmosphere, as the structure barrier layer is not recommended). The EVOH in our invention may be blended with the polyamide r sin for th outer layer (and is preferably blended therein) to maintain and possibly improve the balance of good properties achieved with the specific combination of layers. Com-

pare for instance the structures of examples 12 and 13 of th present application, that differ only in the presence of 30% of EVOH blended with the polyamide with a melting point equal to or higher than 175 °C in the outer abuse layer. Th structur containing the EVOH/polyamide blend behaves essentially like the one with a pure polyamide layer as far as shrinkability, mechanical properties, and stack sealability are concerned and in some respects it gives even better results : an increase in the shrink properties (81% versus 72%), an increase in modulus (see Table 1), a slightly higher puncture resistance, a significantly lower number of rejects in the in-line abuse test (see Table 2), and a slightly lower SIT min. (see Table 3). The person skilled in the art would not have had any motivation to blend an EVOH (generally used for its oxygen barrier properties) to the suitably selected polyamide used in our structures for the ***outer*** layer, and in any case he could not have expected to get these results in terms of shrinkability, mechanical properties and sealability.

Applicants respectfully ask that the new set of claims now presented, and discussion of the invention be carefully considered, and that the claims be allowed.

Respectfully submitted,

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